

CLAIMS

1. A method for manufacturing a micro needle array, comprising the steps of:
preparing an X-ray mask by forming an absorber having a configuration of the
5 micro needle array on a substrate;
preparing a PMMA cast for the micro needle array by exposing PMMA to vertical
and inclined X-rays using the X-ray mask;
preparing a flexible PDMS mold having a configuration opposite to that of the
PMMA cast by pouring PDMS on the PMMA cast;
10 filling an upper surface of the PDMS mold with a gel type of polymer to obtain a
desired thickness of the polymer;
patterning a desired configuration of a hole by irradiating UV rays on the polymer;
and
separating the PDMS mold to complete the polymer micro needle array.
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2. The method according to claim 1, wherein the step of preparing the X-ray mask
having the configuration of the micro needle array comprises the steps of:
forming an insulating layer by forming an oxide layer (SiO_2) on the substrate;
forming a base substrate for electroforming by depositing a Cr/Au metal layer on
20 the insulating layer;
patterning the configuration of the micro needle array using a photosensitive
polymer, a developer and an etchant; and
forming the X-ray absorber by electroforming an Au layer using the patterned
photosensitive polymer and removing the patterned photosensitive polymer.
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3. The method according to claim 2, wherein the substrate comprises a silicon
substrate, a boron nitride (BN) substrate, or a substrate with a low stress nitride layer.